

Two new species
and a new genus of coral-reef-inhabiting
Munnidae from Bora Bora
and Moorea, Society Islands
(Crustacea: Isopoda)

by

Hans-Georg MÜLLER *

With 44 figures

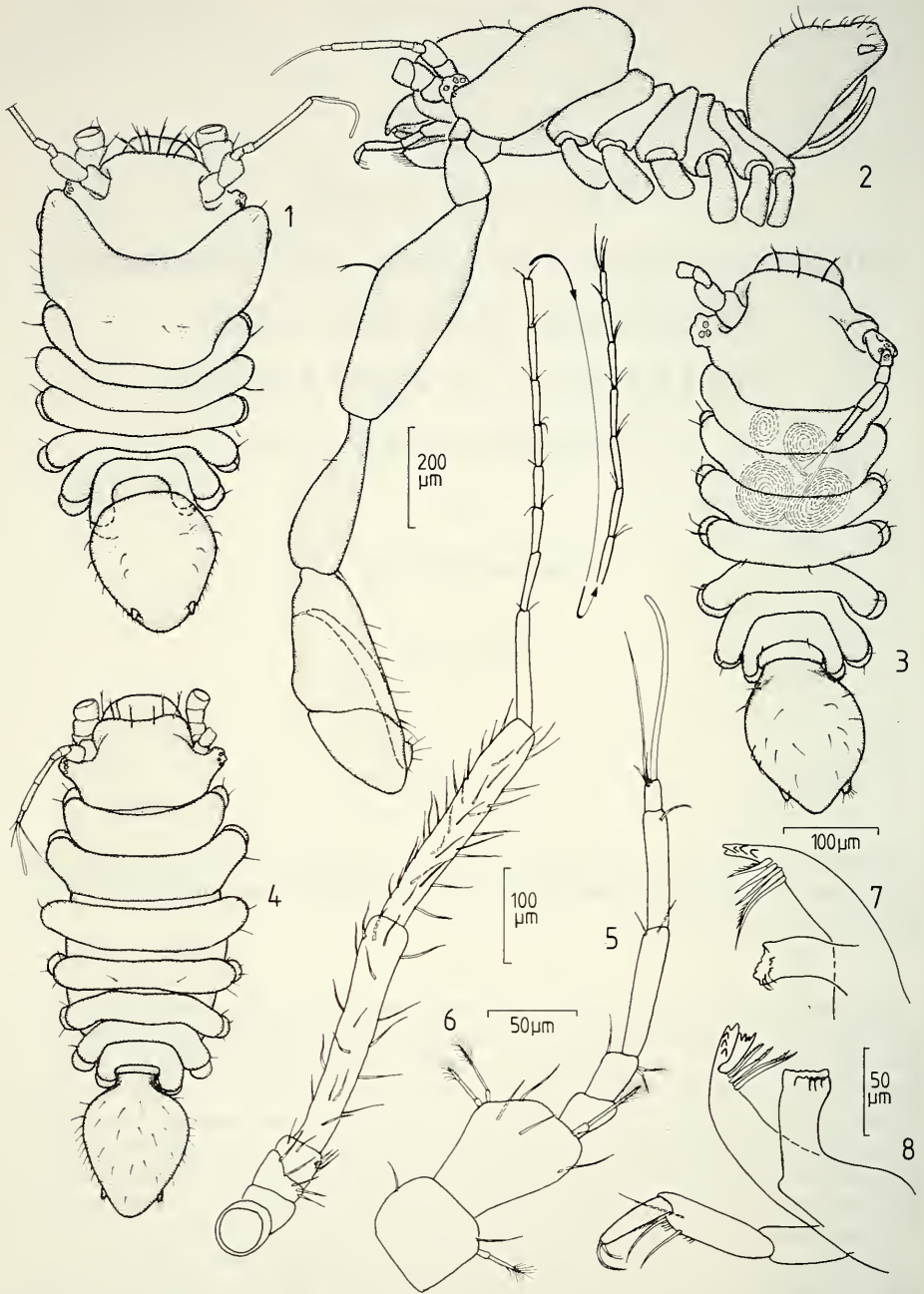
ABSTRACT

Munna temae n. sp. and *Salvatiella* n. gen. *polynesica* n. sp. are described. These species have been found associated with dead corals in shallow water on reefs at Bora Bora and Moorea, Society Islands.

Studies on sub-tropical and tropical Indo-Pacific Munnidae have been few and sporadic in the past and nothing is known on this family to date from French Polynesia. The only more actual work available was published by POORE (1984) who reports on 5 species from Australia and redefined the genera *Munna* Krøyer 1839 and *Uromunna* Menzies 1962. Most species of Munnidae are poorly known and need to be redescribed, making their recognition often difficult if not impossible. The two species described here were collected by the author during a recent survey of the isopod fauna from coral reefs at Bora Bora and Moorea, Society Islands. Detailed informations on the collecting localities can be found in GALZIN & POINTIER (1985) and PIRAZZOLI *et al.* (1985).

Specimens are deposited in the Senckenberg-Museum, Frankfurt (SMF), Muséum d'histoire naturelle, Genève (MHNG) and in the Muséum national d'histoire naturelle, Paris (MNHN).

* Zoologisches Institut, Neues Tierhaus, Heinrich-Buff-Ring 29, D-6300 Giessen, RFA.



FIGS 1-8.

Munna temae n. sp.: 1, ♂ holotype, dorsal view; 2, ♂ holotype, lateral view; 3, gynandromorph, paratype, dorsal view; 4, ♀ paratype, dorsal view; 5-8, ♂ paratype: 5, antenna 1; 6, antenna 2; 7, left mandible, palp omitted; 8, right mandible.

Munna Krøyer, 1839

WILSON (1980: 222) points out that *Munna* is a complex of genera and suggests to place species with sexually dimorphic pereopod 1 — like the species described here — in a separate genus, which may be *Haliacris* Pfeffer, 1887. I agree with this and the only reason why it was not done here is the incomplete knowledge of many species described. It seems to be more advisable to “reorganize” the genus *Munna* within the scope of a revision, which could not be the object of this article.

***Munna temae* n. sp.** (Figs 1-28)

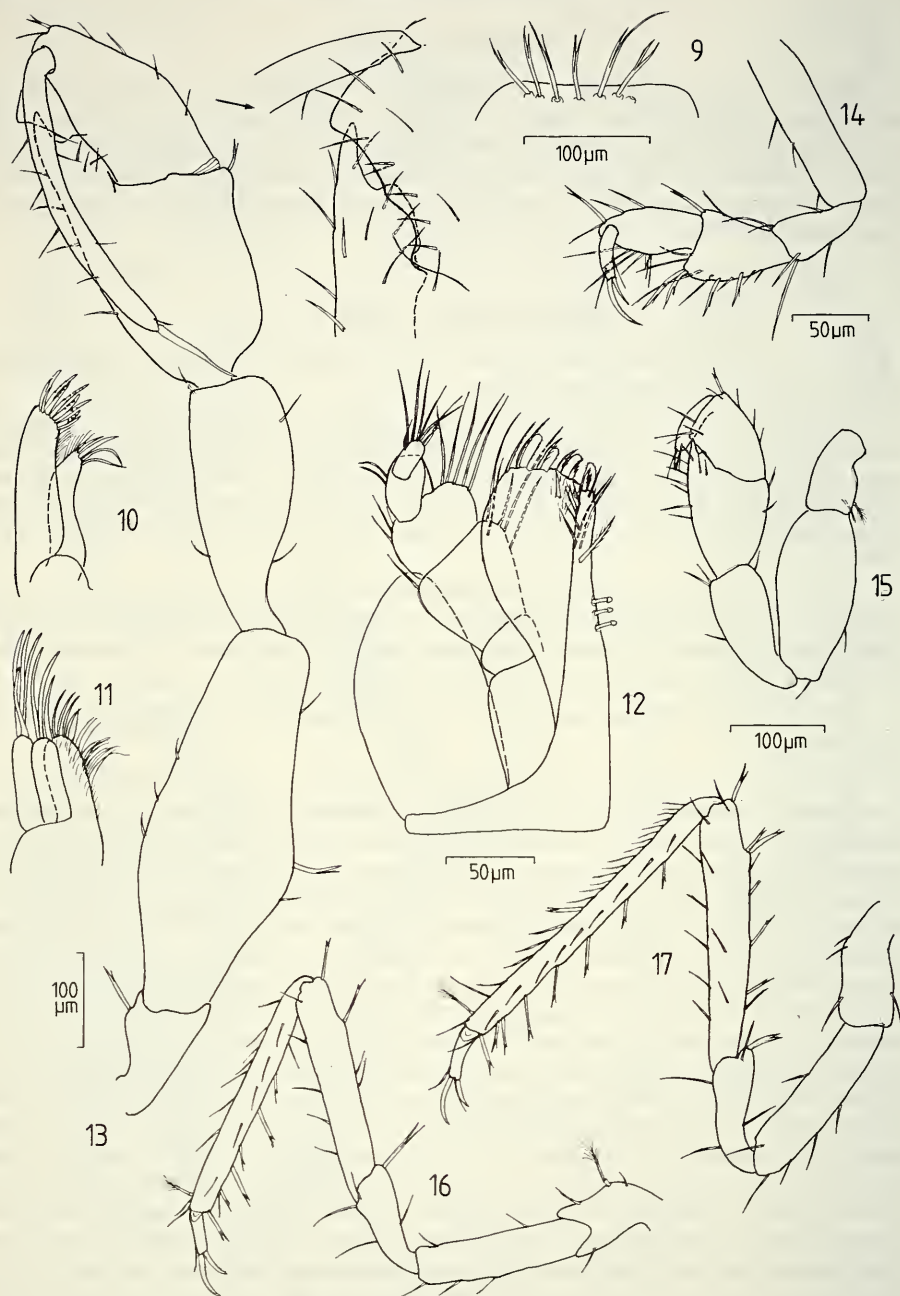
H o l o t y p e : ♂ (SMF 17880), Moorea; Temae, the Islet Reef, north-east of airport, dead corals near beach, about 2 m, 31 March 1988.

P a r a t y p e s : 4♂♂, 2 immature adults, 1 gynandromorph with endoparasitic nematodes (SMF 17881); together with holotype. 1♂ (MHNG), Moorea; crest of Tiahura barrier reef, dead corals, 0.5-1 m, 25 March 1988. 1♀ (MHNG), Moorea; slope of exposed fringing reef near Afareaitu, dead corals, 1-2 m, 26 March 1988. 1♂, 2♀♀ (MNHN), Bora Bora; fringing reef near Vaitape, dead corals, covered with sponges and algae, 0.5-1 m, near slope, 27 February-6 March 1988.

D i a g n o s i s : Species with pereopod and pereonite 1 sexually dimorphic, greatly enlarged in ♂. Males distinguished from other species of similar habitus through extreme enlargement of pereonite 1, shape of dactylus, propodus and carpus of pereopod 1 and pleopods. Females characterized by its general habitus, pereopod 1 and operculum.

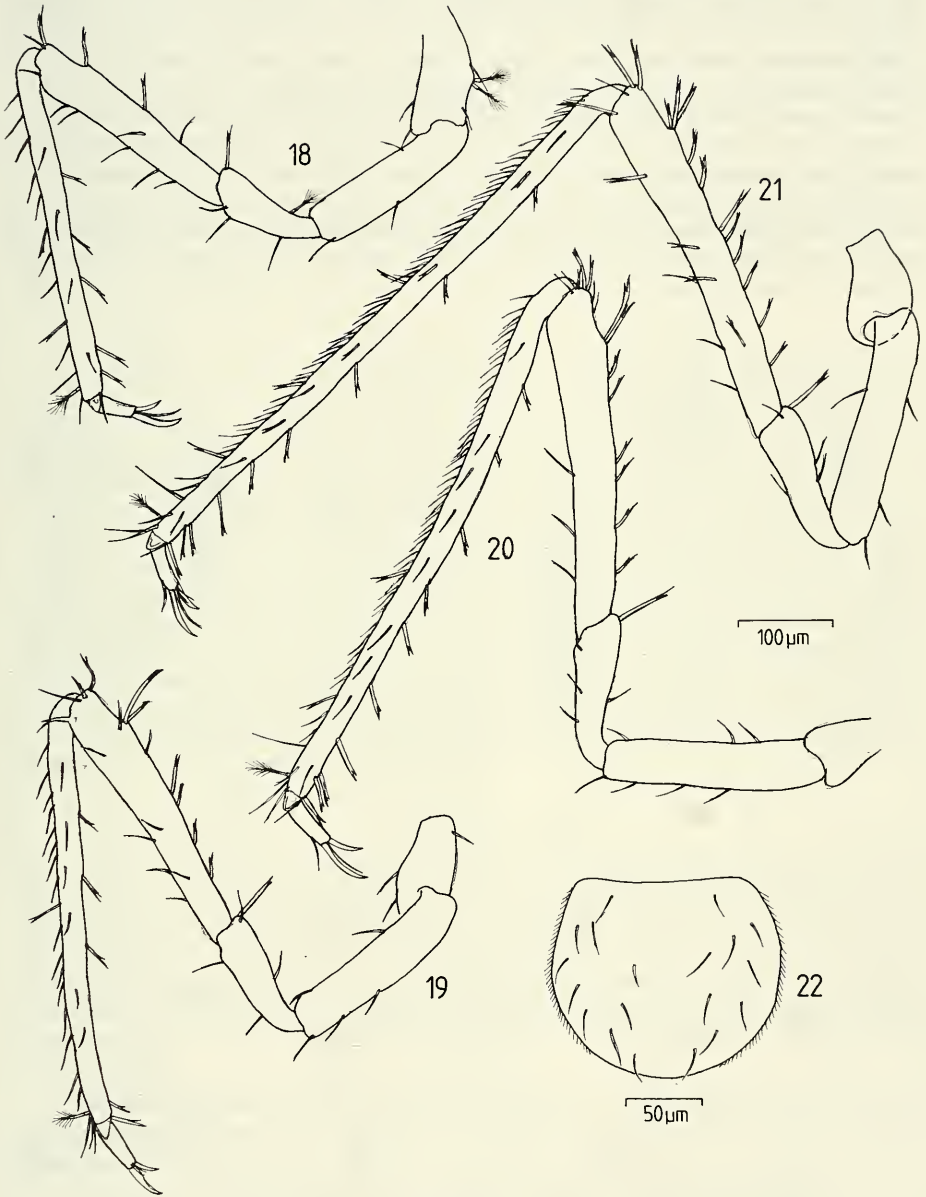
Derivatio nominis: The specific name is derived from the type locality, Temae Reef at Moorea.

D e s c r i p t i o n , ♂: Length about 1.0 mm (front margin of rostrum to tip of pleotelson), maximum width 0.3 mm (across pereonite 1). Pereonite 1 swollen for accomodation of pereopod 1 musculature. Cephalon with anterior margin nearly straight, bearing 6 stout, distally bifid setae; eyes of 4-5 ommatidia on short stalks. Pereonites 2-7 subequal in length. Coxae of pereonites 1-2 and 4-7 visible in dorsal view. Pleon consisting of one small segment and pyriform globose pleotelson, this about 1.3 times longer than wide and posteriorly rounded. Antenna 1 of 7 articles, with distal 5 articles narrow and 5th-6th article elongate; single aesthetasc on terminal article, together with elongate simple seta. Antenna 2 with 4 short basal peduncle articles and 2 distal subequal elongate peduncle articles, these covered with numerous short simple setae; flagellum of 15 very slender articles of which the first is longest. Mandibular palp 3-segmented, second segment longest, with 3 distal spines; terminal segment two thirds length of segment 2, with 2 distal spines; incisor of both left and right mandible of 5 cusps; left mandible without lacinia mobilis, with 5 serrate spines in spine row; right mandible with lacinia mobilis having 4 cusps, 4 serrate spines in spine row; molar of both left and right mandible distally truncate, with 3 short, curved setae. Maxilla 1, inner ramus with 4 apical spines and several fine hairs; outer ramus with 10 distal serrate spines and several fine hairs near inner distal margin. Maxilla 2, inner ramus with 4 distal spines and numerous fine hairs of different lengths near inner margin; inner lobe of outer ramus with 3, outer lobe of outer ramus with 4 distal elongate spines. Maxilliped, palp with second article longest and widest, terminal article smallest, all 5 articles setose; endite with 3 coupling hooks on medial margin, distal margin truncate, with 4 feathered leaf-like spines and 6 fringed spines; stout setulose spine near inner distal margin of endite. Pereopod 1 greatly enlarged



FIGS 9-17.

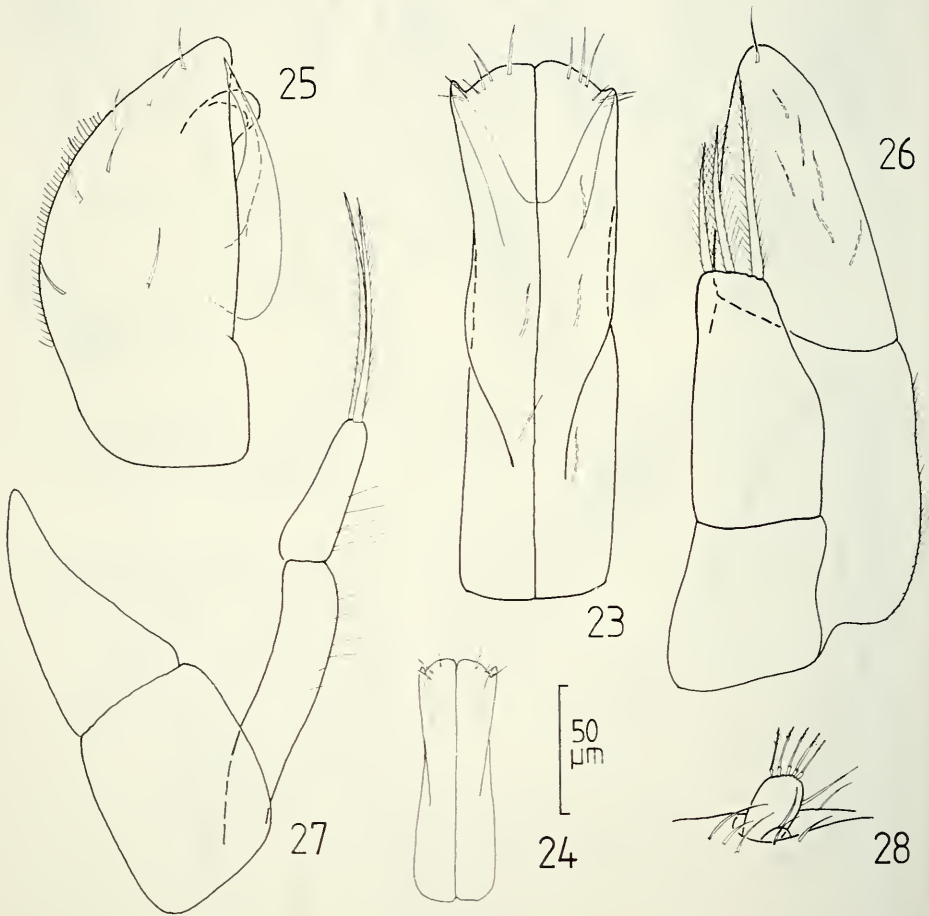
Munna temae n. sp. (9, ♂ holotype; 10-13, 16-17, ♂ paratype; 14, ♀ paratype; 15, immature adult (preparatory ♂), paratype): 9, front of cephalon; 10, maxilla 1; 11, maxilla 2; 12, maxilliped; 13, pereopod 1; 14, pereopod 1; 15, pereopod 1; 16, pereopod 2; 17, pereopod 3.



FIGS 18-22.

Munna temae n. sp. (18-21, ♂ paratype; 22, ♀ paratype); 18, pereopod 4; 19, pereopod 5; 20, pereopod 6; 21, pereopod 7; 22, operculum.

and robust, longer than body; ischium longest, which is widest in the middle where it bears a strong, bifid spine; merus widening distally; carpus with posterodistal angle produced into strong bidentate process; propodus with posterior margin having hyaline produced flange as in figure 13; dactylus elongate-slender, about 12 times longer than wide, excluding unguis which is slender, somewhat curved and spine-like, having about 1/4 length of dactylus. Pereopods 2-7 elongate-slender, increasing in length posteriorly, densely setose; dactyl with fine unguis, as long as dactyl and shorter supplementary claw. Pleopod 1, rami fused for nearly entire length; inner distal lobe rounded, bearing 6 simple setae; outer lobe triangular, short. Pleopod 2 longer than wide, outer surface of outer ramus with 7 short simple setae; outer margin with row of several short hairs. Pleopod 3, both rami biarticulate, outer ramus with single apical seta and 6 simple setae on anterior surface; inner ramus just reaching beyond basal article of outer ramus, with 3 distal



FIGS 23-28.

Munna temae n. sp. (23, 25-28, ♂ paratype; 24, gynandromorph paratype); 23, first pleopods; 24, first pleopods; 25, pleopod 2; 26, pleopod 3; 27, pleopod 4; 28, uropod.

plumose setae. Pleopod 4, both rami biarticulate; outer ramus elongate-triangular; inner ramus slender with 2 plumose setae at its tip. Uropod of 2 rami, longer ramus bearing 5 feathered sensory setae distally; smaller ramus about 1/4 length of the other, with single simple seta distally.

♀: Body ovate, widest at pereonite 3; pereonite and pereopod 1 not enlarged as in ♂, pereonites subequal in length. Pereopod 1 shorter and more robust than following legs, similar to pereopod 1 of preparatory males, but lacking posterodistal produced angle of carpus (figs 14, 15).

Gynandromorph: There are very few records of gynandromorphs in literature reporting on crustaceans. A single specimen of *Munna temae* has been found containing 4 nematode parasites which apparently influenced strongly the development of that individual. This gynandromorph has only about half the size of typical mature males and females. Its general habitus is that of a ♀ which has however fully developed ♂ pleopods.

D i s t r i b u t i o n : Bora Bora and Moorea, Society Islands.

Remarks: It is difficult to discuss interspecific relationships in this poorly studied genus. *M. temae* is similar in its habitus to a group of species characterized by a grossly enlarged pereopod 1 in the ♂ and the presence of a mandibular palp. The following species belong to that group: *Munna affinis* Nordenstam, 1933; *Munna antarctica* Pfeffer, 1887; *Munna avatshensis* Gurjanova, 1936; *Munna bituberculata*, Nordenstam, 1933; *Munna chromatoccephala* Menzies, 1962; *Munna hentyi* Poore, 1984; *Munna instructa* Cleret, 1971; *Munna macquariensis* Hale, 1937; *Munna maculata* Beddard, 1866; *Munna neglecta* Monod, 1931; *Munna palmata* Liljeborg, 1851; *Munna petronastes* Kensley, 1984; *Munna psychrophila* Vanhöffen, 1914; *Munna stephensi* Gurjanova, 1933 and *Munna varians* Sivertsen & Holthuis, 1980. Within this species-complex it can be seen that the dimorphism in size of pereonite and pereopod 1 of males and females varies greatly in different species. In *M. temae* this sexual dimorphism is strongly marked, similar to *M. petronastes* from Belize. It seems that this species to date shows the closest affinities to *Munna temae* (see Kensley 1984: 77). However, no certain statements are possible at present in this poorly studied isopod family.

Salvatiella n. gen.

D i a g n o s i s (♂): Munnidae having the mandibular molar elongate with several small teeth in distal half. Mandibular palp relatively short with setation reduced. Maxilliped with small epipod, not reaching beyond distal half of second segment of 5-segmented palp. Pereopod 1 short and very robust; short carpus about 1.7 times wider than long, triangular. Propodus largest of all pereopod 1-segments, bearing a strong horn-like process distally; palm with row of many sharp teeth, decreasing in size distally; dactylus very long and slender, sharply pointed and curved distal part reaching beyond basal half of carpus.

Derivatio nominis: The generic name is dedicated to Dr. Bernard Salvat, who contributed much to our knowledge of French Polynesian coral reefs and its associated organisms.

Type-species: *Salvatiella polynesica*, new species, by present designation.

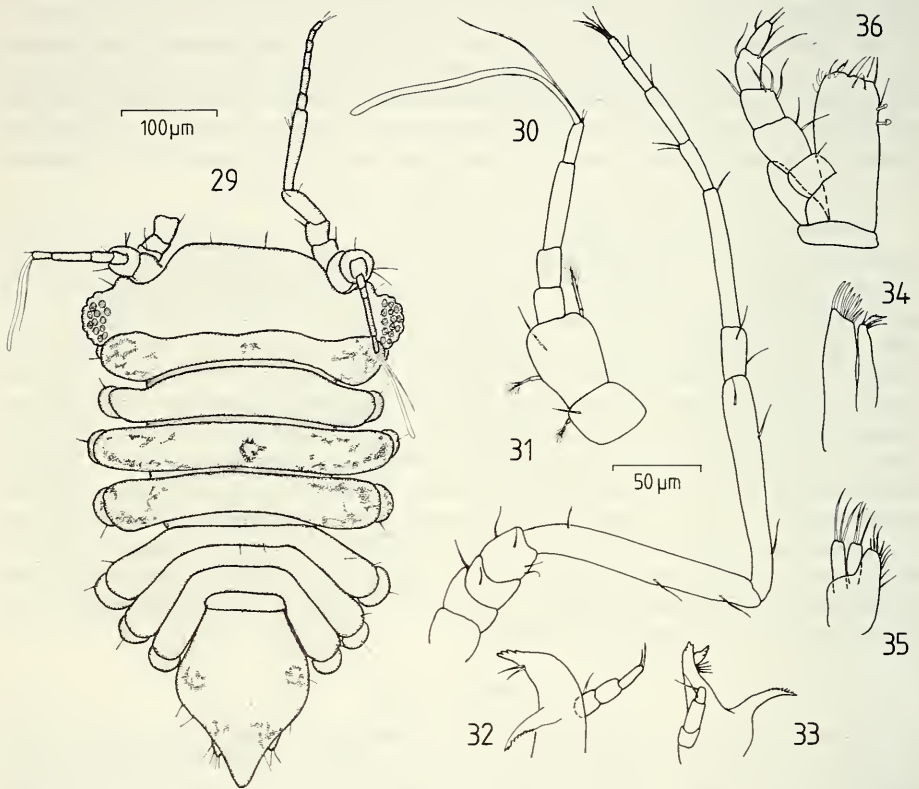
Salvatiella polynesica (Figs 29-44)

H o l o t y p e : ♂ (SMF 17879), Bora Bora, fringing reef near Vaitape; from dead corals, covered with sponges and algae, 0.5-1 m, near slope, 27 February-6 March 1988.

Paratype: 1♂ (MHNG), together with holotype.

Diagnosis: As for the genus.

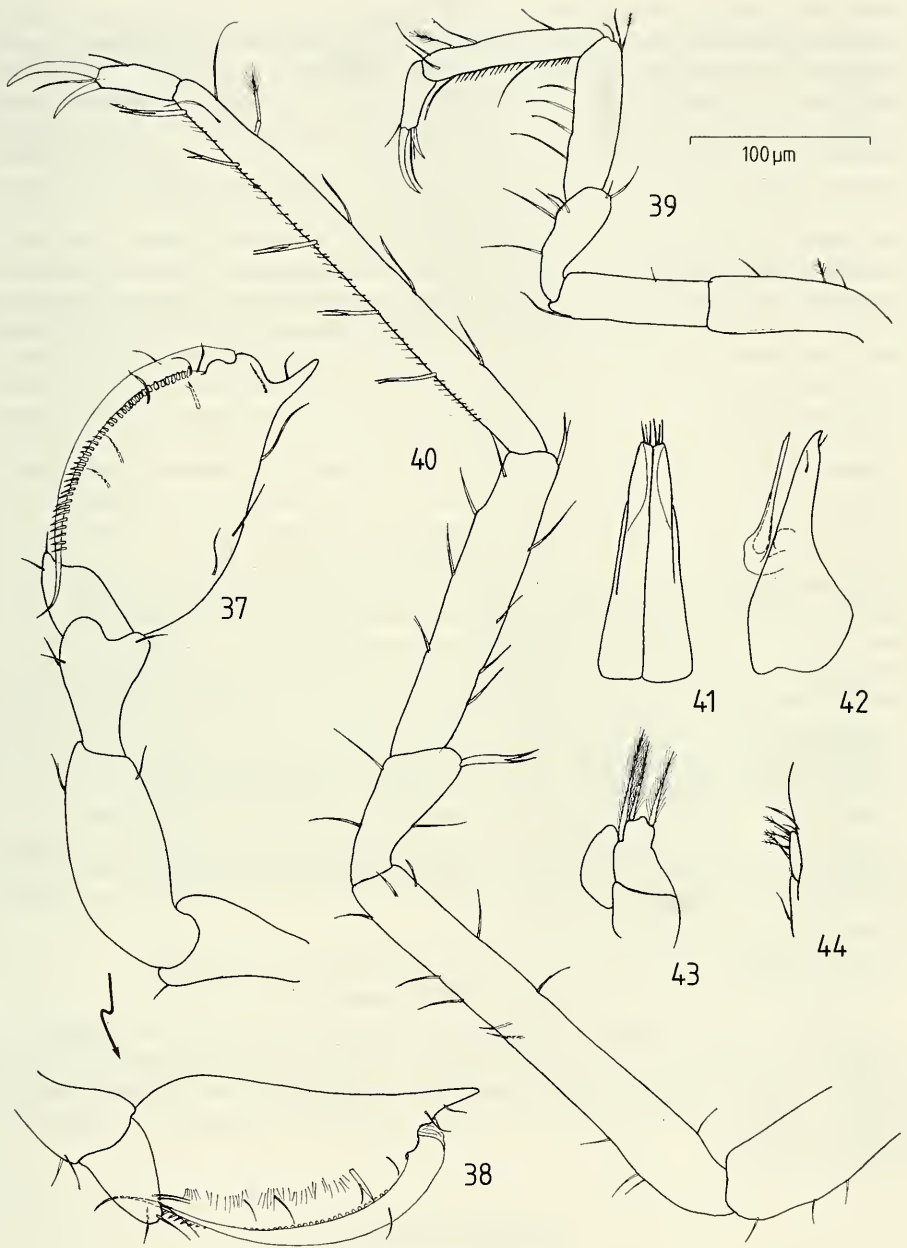
Derivatio nominis: Named after the geographic area of the type locality, French Polynesia.



FIGS 29-36.

Salvatiella n. gen. *polynésica* n. sp. (29, ♂ holotype; others ♂ paratype): 29, dorsal view; 30, antenna 1; 31, antenna 2; 32, left mandible; 33, right mandible; 34, maxilla 1; 35, maxilla 2; 36, maxilliped.

Description, ♂: Minute species of 0.57 mm total length (front of cephalon to tip of pleotelson), maximum width (across head) 0.34 mm. Cephalon 3.4 times wider than long, bearing large lateral, well pigmented eyes; preorbital lobes well developed, rounded, bearing short simple setae; frontal margin of head nearly straight, with two short simple setae. All pereonites subequal in length, with coxae visible in dorsal view. Pleon consisting of single short segment and broadly ovate pleotelson, apex of which produced, fairly pointed. Irregular pigment patches on dorsal surface of pereonites 1, 3-4 and



FIGS 37-44.

Salvatiella n. gen. *polynesica* n. sp., ♂ paratype: 37-38, pereopod 1, viewed from different angles; 39, pereopod 2; 40, pereopod 7; 41, first pleopods; 42, pleopod 2; 43, pleopod 3; 44, uropod.

pleotelson. Antenna 1 of 6 articles, with distal 4 articles narrow and 5th article elongate; single aesthetasc and simple seta on terminal article. Antenna 2 with 4 short basal peduncle articles and 2 distal subequal elongate articles, these covered with few simple setae; flagellum of 6 slender articles, of which the second is longest. Mandibular palp 3-segmented, segments subequal in length, with only 1 seta on first and 2 setae on third segment; incisor of both left and right mandible with 4 cusps; left mandible without lacinia mobilis, with only 2 spines in spine row; right mandible with lacinia mobilis having 4 cusps and 4 spines in spine row; molar of both left and right mandible elongate-slender, with several small teeth in distal half. Maxilla 1, inner ramus with 1 stout, serrate apical spine and 3 short, slender spines; outer ramus with 8 apical spines. Maxilla 2, inner ramus with 9 short spines of different length distally and near inner margin; inner and outer lobe of outer ramus with 3 distal elongate spines. Maxilliped, palp with second article longest and widest, others subequal in length, all 5 articles setose; endite with 2 coupling books on medial margin; distal margin truncate, with one serrate and 7 slender, simple spines; epipod small, ovate, not reaching beyond distal half of second palp segment. Pereopod 1 short and robust; merus widening distally, 1.5 times longer than wide; carpus very short, triangular, about twice as wide as long; propodus largest of all segments, ovate, bearing strong horn-like process distally; palm with row of 40 sharp teeth, decreasing in size distally; dactylus very long and slender, sharply pointed and curved distal part reaching beyond basal half of carpus. Pereopod 2 similar in length to pereopod 1, with segments much more slender; dactyl with fine unguis about as long as dactyl and shorter supplementary claw; propodus about 6 times as wide as long, posterior margin with row of about 20 short, stiff setae and 2 elongate slender spines; posterior margin of both carpus and merus with slightly curved, elongate slender spines. Pereopods 3-7 similar to each others, with propodus, carpus and ischium much longer than in pereopods 1-2. Pereopod 7, posterior margin of propodus with row of about 43 short, simple setae and 5 stout bifid spines; carpus and merus with stout bifid spine at anterodistal angle. First pleopods much wider at base than at apex, fused over entire length; apical lobes obliquely truncate with 3 simple setae. Pleopod 2 subtriangular, greatly narrowed in distal half, apex pointed, with 2 short subapical setae. Pleopod 3, outer ramus apparently unisegmented, oval, not reaching beyond distal article of inner ramus; biarticulate inner ramus with 3 distal plumose setae. Uropod apparently unisegmented, elongate-oval, with 4 minute feathered sensory setae and some simple setae.

♀ : unknown.

D i s t r i b u t i o n : Bora Bora, Society Islands.

Remarks: *Salvatiella* n. gen. *polynésica* n. sp. shows some remarkable characters not shared by any other member of the Munnidae. Whereas its general habitus is that of a typical munnid, its greatly modified mouthparts and pereopod 1 are the justification for placing it in a separate genus. These modifications may be adaptations for a carnivorous mode of feeding.

ACKNOWLEDGMENTS

The research was carried out mainly at the marine biological station, Antenne Museum (Ecole Pratique des Hautes Etudes, EPHE) at Moorea, French Polynesia and the Laboratoire de Biologie Marine et Malacologie, Université de Perpignan, France (director: Dr. Bernard Salvat). My thanks are due to Dr. B. Salvat for making it possible to use the

facilities of the institutes in Moorea and Perpignan and to Dr. René Galzin, director of the Antenne Museum for organizing the field work at Moorea. I am also grateful to Dr. G. Wilson, Scripps Institution of Oceanography, La Jolla, California and Dr. T. Wolff, Zoologisk Museum, Copenhagen for helpful comments. This study was partly financed through a grant of the Hessische Graduiertenförderung (HGFÖN).

ZUSAMMENFASSUNG

Munna temae n. sp. und *Salvatiella* n. gen. *polynésica* n. sp. werden beschrieben. Beide Arten wurden im Flachwasser der Korallenriffe von Bora Bora und Moorea, Gesellschaftsinseln, vergesellschaftet mit toten Korallen gefunden.

REFERENCES

- GALZIN, R. & J. P. POINTIER. 1985. Moorea island, Society Archipelago. In: B. Delesalle, R. Galzin & B. Salvat (Eds.). 5th International Coral Reef Congress, Tahiti, 27 May-1 June 1985. Vol. 1: "French Polynesian Coral Reefs": 73-102.
- KENSLEY, B. 1984. The Atlantic Barrier Reef Ecosystem at Carrie Bow Cay, Belize, III: New Marine Isopoda. *Smiths. Contr. mar. Sci.* 24: 1-81.
- PIRAZZOLI, P. A. *et al.* 1985. Leeward islands (Maupiti, Tupai, Bora Bora, Huahine) Society Archipelago. In: B. Delesalle, R. Galzin & B. Salvat (Eds.). 5th International Coral Reef Congress, Tahiti, 27 May-1 June 1985. Vol. 1: "French Polynesian Coral Reefs, Reef Knowledge and Field Guides": 17-72.
- POORE, G. C. B. 1984. Redefinition of *Munna* and *Uromunna* (Crustacea: Isopoda: Munnidae), with descriptions of five species from coastal Victoria. *Proc. R. Soc. Vict.* 96 (2): 61-81.
- WILSON, G. D. 1980. New insights into the colonization of the deep sea: Systematics and zoogeography of the Munnidae and the Pleurogoniidae comb. nov. (Isopoda: Janiroidea). *J. nat. Hist.* 14: 215-236.